

ABSTRACT OF THE DISCLOSURE

A fluid-structure interactive analysis is performed while n types of wing structure models are caused to flap in accordance with a prescribed model of flapping manner. Based on an analysis, data 1, data 2, ...data n of physical values related to fluid behavior and physical values related to structural behavior are calculated. Among data 1, data 2, ...data n , a data having a prescribed parameter such as the lift force optimized is extracted. A prototype of a wing portion is formed, which has such a structure that is specified by various parameter values of the numerical model of wing structure corresponding to the extracted data. A driving unit 905 drives the prototype of the wing portion in a manner of flapping that is represented by the flapping motion model equivalent to the manner of flapping of an insect. At this time, the wing has a stiffness that is suitable for flapping flight so that prescribed parameters come to have optimal values.